

Find the distance between the two parallel lines.

Ex 3: $y = 3x + 5$ and $y = 3x - 2$

① Sketch

② Choose a pt (Best to choose y-int)

③ Do like previous

(0, 5)

$$\begin{cases} y = -\frac{1}{3}x + 5 \\ y = 3x - 2 \end{cases}$$

$$[3x - 2 = -\frac{1}{3}x + 5]$$

$$9x - 6 = -x + 15$$

$$10x = 21$$

$$x = 2.1$$

$$y = 3(2.1) - 2$$

$$y = 4.3$$

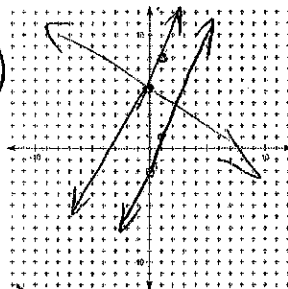
(2.1, 4.3) new pt

(0, 5) y-int

$$d = \sqrt{(2.1 - 0)^2 + (4.3 - 5)^2}$$

$$\sqrt{4.9}$$

$$d \approx 2.21$$

Ex 4: $y = \frac{-1}{2}x$ and $y = \frac{-1}{2}x + 6$

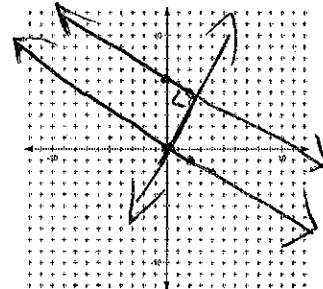
$$\begin{cases} y = 2x \\ y = -\frac{1}{2}x + 6 \end{cases}$$

$$2x = -\frac{1}{2}x + 6$$

$$2\frac{1}{2}x = 6$$

$$x = 2.4$$

$$y = 4.8$$

(2.4, 4.8)
(0, 0)

$$d = \sqrt{2.4^2 + 4.8^2}$$

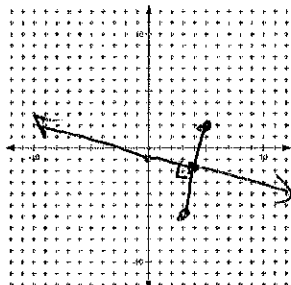
$$d \approx 5.37$$

Find the equation of the perpendicular bisector of the segment with the given endpoints.

Ex 5: (5, 2) (3, -6)

$$M(4, -2)$$

$$m = \frac{2 - (-6)}{5 - 3} = \frac{8}{2} = 4$$



$$(4, -2) \quad m = -\frac{1}{4}$$

$$-2 = -\frac{1}{4}(4) + b$$

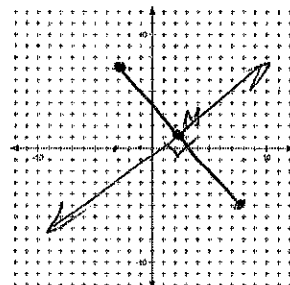
$$-1 = b$$

$$y = -\frac{1}{4}x - 1$$

Ex 6: (-3, 7) (8, -5)

$$M(\frac{5}{2}, 1)$$

$$m = \frac{7 - (-5)}{-3 - 8} = \frac{12}{-11}$$



$$l = \frac{5}{2} \left(\frac{11}{12} \right) + b$$

$$\frac{24}{24} = \frac{55}{24} + b$$

$$-\frac{31}{24} = b$$

$$y = \frac{11}{12}x - \frac{31}{24}$$